



Modeling the links between biodiversity, ecosystem services and human wellbeing in the context of climate change: Results from an econometric analysis of the European forest ecosystems

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Abstract:

This paper constitutes a first attempt to model the relationship between climate change, biodiversity, and ecosystem services, with a specific emphasis on European forests. Firstly, we construct a composite biodiversity indicator that integrates quantitative and qualitative changes of biodiversity projected to 2050 for the EU-17 under future IPCC scenarios. Secondly, this indicator is integrated into two simultaneous equation models to capture the marginal impacts of changes in biodiversity on the value of ecosystem goods and services (EGS) due to climate change. Our estimation results confirm the role of biodiversity as a nature-based policy solution for climate change mitigation, shedding light on the policy actions that generate co-benefits by enhancing ecosystems' capacity to mitigate climate change impacts, while conserving biodiversity and sustaining the flows of EGS for human livelihoods. Especially, nature-based mitigation policies are more cost-effective and better at coping with the ethic and inequality issues associated with distributional impacts of the policy actions, compared to the pure technical solutions to improving energy efficiency and reducing emissions. However, the strength of biodiversity as a nature-based policy option for climate change mitigation depends on both the nature of the EGS and the geographical area under consideration.

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Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES)

Special Report on Emissions Scenarios (SRES) Scenario: SRES A1, SRES A2, SRES B1, SRES B2

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Temperature

Temperature: Fluctuations

Climate Change and Human Health Literature Portal

Geographic Feature: ☒

resource focuses on specific type of geography

Other Geographical Feature

Other Geographical Feature : forest

Geographic Location: ☒

resource focuses on specific location

Non-United States

Non-United States: Europe

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation: ☒

mitigation or adaptation strategy is a focus of resource

Mitigation

Model/Methodology: ☒

type of model used or methodology development is a focus of resource

Exposure Change Prediction, Methodology

Resource Type: ☒

format or standard characteristic of resource

Policy/Opinion, Research Article, Research Article

Timescale: ☒

time period studied

Medium-Term (10-50 years)